ment of the present invention, a switch (e.g., logical switch, mechanical switch, electromechanical switch, electrical switch, or the like) may be provided on the RFID device that inhibits the RFID device from responding to any energization by a reader or the like unless the predetermined motion or sequence of motions are detected at the RFID device. Thus, the RFID device is enabled to unilaterally control whether it provides any data to a requesting source based on whether the predetermined motion has been detected.

[0013] In accordance with at least some embodiments of the present invention, passwords could also be entered by a user of the RFID device by using a combination lock metaphor. For example, a password could correspond to rotating the RFID device right, then back to original position, then right, etc. Thus, while the password combination is used to enable the RFID device to transmit data to a reader, the RFID device may also send the results of the detected motion (i.e., the RFID device may send the reader the combination of right-return-right, likely as binary data). The reader may then analyze the motion information as an additional password for verifying the identity of the RFID device and the holder of the RFID device. If either the card information or the motion-based-password is not valid, then the reader may determine that the RFID device is not granted access to the asset protected by the reader. Thus, the password provided to the reader as a result of detecting motion may be used to represent something that the user knows in addition to the thing (RFID device) the user is carrying, thereby providing two layers of security.

[0014] This two layer security paradigm can be implemented with a traditional reader that does not necessarily have a keypad. If a user's card is lost or compromised, it will be unusable by another user who does not know the motion-based password.

[0015] In accordance with further embodiments of the present invention, the "motion information" captured by the directional sensing mechanism may also correspond to certain messages (e.g., a table may be provided mapping certain sequences of motion to certain messages). Accordingly, the RFID device may either send the corresponding message or the captured motion information to the reader where it is analyzed. The message may, for example, indicate that the holder of the RFID device is under duress. As can be appreciated by one skilled in the art, other sequences of motions may be mapped to different messages to provide other indicia about the holder of the RFID device. In some embodiments the table may be maintained in the RFID device. In some embodiments the table may be maintained in the reader. In some embodiments, the table may be maintained in a combination of the RFID device and the reader.

[0016] In accordance with still further embodiments of the present invention, the integration of a directional-sensing mechanism onto a chip can be leveraged in other applications, such as in mobile communication and cellular phone applications. More specifically, a SIM card or similar processing platform may be adapted to include a directional-sensing mechanism that acts as an input to the card. Thus, a user of the mobile communication device may be allowed to control the operation of the mobile communication device (e.g., make call, answer call, reject call, etc.) by simply shaking the mobile communication device or by moving the mobile communication device in a predetermined pattern of motion. In still further embodiments, a user can simply shake or tap their mobile device when they are on a call with another user or when they are busy doing something else (e.g., during a meeting). The shaking or tapping of the mobile device may cause the mobile device to generate a predetermined text message which is transmitted back to the caller, informing the caller that the intended recipient of the message is busy and will call back later. In other embodiments, a user may be allowed to locate the menu of services and applications provided on the mobile device by simply shaking or tapping the mobile device. In still other embodiments, the mobile device may be adapted to

[0017] In still other embodiments a combined accelerometer and gyroscope unit is provided that generally comprises: a proof mass; primary actuating means operable to actuate the proof mass along a primary axis; secondary actuating means operable to actuate the proof mass along a secondary axis; secondary sensing means operable to sense the position of the proof mass along the secondary axis; and primary sensing means operable to sense the position of the proof mass along the primary axis wherein $\Sigma\Delta$ force-feedback loops are set up for both the secondary axis and the primary axis.

[0018] It is another aspect of the present invention to provide a combined accelerometer and gyroscope unit wherein the accelerometer and gyroscope unit is a MEMS accelerometer and gyroscope unit.

[0019] It is another aspect of the present invention to provide a combined accelerometer and gyroscope unit wherein both the primary actuating means and the primary sensing means are comb-drive capacitors.

[0020] It is another aspect of the present invention to provide a combined accelerometer and gyroscope unit wherein separate comb-drive capacitors are provided for actuating and for readout.

[0021] It is another aspect of the present invention to provide a combined accelerometer and gyroscope unit wherein time multiplexing is used to allow the same comb-drive capacitors to be utilised both for actuating and for readout.

[0022] It is another aspect of the present invention to provide a combined accelerometer and gyroscope unit wherein both the secondary actuating means and the secondary sensing means are differential parallel plate capacitors.

[0023] It is another aspect of the present invention to provide a combined accelerometer and gyroscope unit wherein separate differential parallel plate capacitors are provided for actuating and for readout.

[0024] It is another aspect of the present invention to provide a combined accelerometer and gyroscope unit wherein time multiplexing is used to allow the same differential parallel plate capacitors to be utilised both for actuating and for readout.

[0025] It is another aspect of the present invention to provide a combined accelerometer and gyroscope unit wherein separate $\Sigma\Delta$ force-feedback loops are provided for the primary mode and the secondary mode.

[0026] It is another aspect of the present invention to provide a combined accelerometer and gyroscope unit wherein the primary loop has an extra input Vjn.

[0027] It is another aspect of the present invention to provide a combined accelerometer and gyroscope unit wherein each loop incorporates an electrical filter.

[0028] It is another aspect of the present invention to provide a combined accelerometer and gyroscope unit wherein at the end of each loop, a quantizer is provided to deliver digital output values.